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Development of a Novel Interprofessional Education Activity with Undergraduate Students: Design, Assessment, and Lessons Learned

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Abstract

INTRODUCTION Interprofessional education (IPE) is essential for students in healthcare disciplines to learn skills necessary for collaborative patient care. While IPE is an essential component of health professional training, implementation is challenging. Faculty members from pharmacy, nursing, exercise physiology, and medical laboratory science at a rural, private university developed an IPE activity with the goal of exposing students to interprofessional care. The process of IPE activity development will also be described.

METHODS Using a pretest/posttest method, data were collected from two student cohorts (n=411) from four disciplines using the Readiness for Interprofessional Learning Scale (RIPLS). Students worked multidisciplinary teams (n=66) to assess patient cases and design a treatment plan. Responses were evaluated using a common rubric. Student feedback on the activity was also gathered after the activity.

RESULTS Students were positively influenced by the exercise. Ten items on the RIPLS had statistically significant differences between pretest and posttest. Students (90.5%) identified the activity improved their understanding of other healthcare disciplines and roles, and 89.7% agreed the activity made them more aware of cultural competency. Common themes of gaining appreciation of teamwork, collaboration to improve patient care, and learning across disciplines emerged from student feedback. Student performance was consistent with academic progression.

CONCLUSION IPE activities improved student readiness for interprofessional learning, produced case responses reflective of interprofessional collaboration, and were viewed positively by students. Faculty were able to identify solutions to challenges identified during project implementation providing support for future activities and a template for others developing IPE activities.

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Implications for Interprofessional Practice

- Provide a template for IPE activity development within a university lacking traditional health care programs and a local academic medical center
- Demonstrate the effectiveness of the IPE activity under study through assessment of student performance, student perceptions, and student readiness for interprofessional learning
- Provide direction for improvement of future IPE activities
- Outline an IPE activity developed with the involvement of unique healthcare disciplines addressing cultural competency, a content area not discussed extensively in IPE literature
- Describe implementation of an IPE activity in a challenging setting due to the rural location and lack of access to traditional health care facilities and disciplines

Introduction

The health care game is changing. Is your team ready? Competent health professionals are required to work together in complex and dynamic healthcare environments and to collaborate in teams (Hood, Cant, Baulch, Gilbee, Leech, Anderson, & Davies, 2014). Each team member must have clear understanding of the roles and responsibilities of each discipline and have an understanding of how each team member contributes to patient care (Gillen, Arora, Sanderson, & Turner, 2013). To assist students in developing this understanding, many universities and health care programs have incorporated interprofessional education (IPE) activities into their curriculum. IPE occurs when two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes (World Health Organization, 2010).

For many, effective collaboration is a learned skill. Members of the healthcare team must practice this skill just as a baseball player practices batting or a basketball team practices offense. While some find this difficult, time consuming, and even counterproductive, practice makes perfect. For undergraduate students to be practice-ready upon graduation, they need knowledge about the principles of good teamwork, to have experienced interprofessional collaboration, and to have been

part of a well-functioning health care team (McKinlay, Pullon, & Murdoch, 2014). Exposing future healthcare professionals to IPE at the undergraduate level allows students to develop, practice, and perfect their collaborative skills within a safe and supportive learning environment.

At a private, rural Midwestern university, an interdisciplinary team of faculty from pharmacy, nursing, exercise physiology, and medical laboratory science (MLS) worked together to develop and implement activities for students to work collaboratively through cultural healthcare cases. Goals for the activities included exposing students to other healthcare disciplines, improving curricular connectivity, and practicing communication and decision making within teams. The IPE activity was assessed to determine 1) students' readiness for IPE before and after the exercise using the *Readiness for Interprofessional Learning Scale* (RIPLS); 2) student perceptions about the activity; 3) students' performance on the case. Provided as a template for IPE developers, this article also discusses activity design and lessons learned during the implementation process.

Literature Review

The ability to work as a team is a critical component

in health care and is one of the core competencies for all health professionals identified by the Institute of Medicine (2003) to address patient safety, quality improvement and patient outcomes. IPE is one avenue to initiate healthcare teamwork.

The concept of IPE is not new, yet curriculum requirements to incorporate IPE continue to evolve. Across disciplines, professionals are working together to create core expectations for educational programs. The Interprofessional Education Collaborative Expert Panel (2011), comprising six sponsors (American Association of Colleges of Nursing, American Association of Colleges of Osteopathic Medicine, American Association of Colleges of Pharmacy, American Dental Education Association, Association of American Medical Colleges, Association of Schools of Public Health) supports the need for collaborative, patient-centered practice. This expert panel compiled a report addressing the four domains for collaborative practice competency: values and ethics for interprofessional practice, roles/responsibilities, interprofessional communication, and teams and teamwork (Interprofessional Education Collaborative Expert Panel, 2011).

There are many examples of IPE activities. Simulation is a popular approach to IPE (Vyas, McCulloh, Dyer, Gregory, & Higbee, 2012; Kane-Gill, Smithberger, 2011; Seybert, 2011; Shrader, McRae, King, Kern, 2011; Marken, Zimmerman, Kennedy, Schremmer, Smith, 2010). Workshops are also a common method to approach basic IPE clinical skills. Buckley, Hensman, Thomas, Dudley, Nevin, & Coleman (2012) integrated medicine, nursing, physiotherapy, radiography, and the operating department to complete half-day IPE sessions that followed patient journeys through the healthcare system. While these sessions are valuable, they are resource and time intensive. Nursing has coordinated IPE with dental students and incorporated the significance of blood pressure monitoring in dental practice (Grant, McKay, Rogers, Wiesenthal, Cherney, & Betts, 2011). These care givers are integral to combine with systematic processes in patient assessment and the overlapping roles of oral health assessment and blood pressure monitoring.

IPE is delivered using case scenarios (Wellmon, Gilin, Knauss, & Linn, 2012), web-based programs (Stevenson, Seenan, Morlan, & Smith, 2012; Sibbald, 2011), didactic coursework (Dobson, et al., 2009), practice laboratories

(MacDonnell, Derreza, Laven, Cohen, & Cohen, 2011), and health promotion programs (Kolomer, Quinn, & Steele, 2010). Another method to provide experiential learning across disciplines is problem-based learning, a learner centered pedagogy requiring students to use inquiry and clinical judgment to solve problems. This strategy purposefully integrates clinical situations and promotes student engagement (Benner, Sutphen, Leonard, & Day, 2010) while creating a link between theory and practice (Chunta & Katrancha, 2010; Staun, Bergstrom, & Waldensten, 2010). Cusack and O'Donoghue (2012) conducted an IPE exercise using problem-based learning with 92 students from medicine, physiotherapy, nursing, and diagnostic imaging; main themes that emerged included collaboration and working together with different professions, structure, and content.

Baker and colleagues (2008) suggest that students involved in IPE experiences generally express positive attitudes towards participation. Contrary to these findings, Delunas and Rouse (2014) found medical students had less positive attitudes towards collaboration and communication than nursing students.

A topic heading used widely in the IPE research is interdisciplinary and allied health professionals. These include occupational and physical therapy in addition to the medical discipline (Titzer, Swenty, & Hoehn, 2012; Giorano, Umland, & Lyons, 2012; O'Carroll, Braid, Ker, & Jackson, 2012). Upon an exhaustive search, no research was found to specifically include disciplines from exercise physiology and MLS students. Furthermore, few studies have incorporated cultural based scenarios into IPE.

Barriers to IPE activities include scheduling, preparation time, outcomes measurement, learner level compatibility, and the need for administrative and financial support (Abu-Rish et al., 2012). The majority of the studies are associated with larger health care networks to provide an array of opportunities for student and faculty to work together.

This paper describes an IPE activity involving unique healthcare disciplines and focusing on cultural competency, which are areas not currently addressed extensively in the literature. While the IPE activity utilizes methods described elsewhere, including problem-based learning and simulated case studies, the

assessment methods utilized in the study allow robust evaluation of the methods utilized. Moreover, solutions to challenges in IPE activity implementation, including logistical concerns and lack of extensive health care networks providing practical interprofessional experiences common in rural settings are described and can be utilized by others with similar concerns.

Methods

Faculty at a private, rural Midwestern university, representing the pharmacy, nursing, exercise physiology, and MLS programs formed an IPE committee tasked with developing required collaborative activities integrated into each program’s curriculum. A student representative from the pharmacy program also attended meetings and provided input during activity planning. Planning began a year in advance of the activity and included monthly committee meetings combined with numerous electronic communications. Discussions began with determining the student groups which would be involved. Junior level students from the pharmacy, exercise

priate media support and sufficient wireless internet access was located.

The next task was designing the activity. Many formats were discussed and existing IPE activities reviewed. As each committee member was serving while continuing their normal teaching load and duties, the desire to utilize existing material was strong. The pharmacy representatives presented cultural cases previously used in their course, which were revised by committee members to incorporate perspectives from other disciplines.

The activity was a novel interdisciplinary case study activity involving third year (of a 0-6 year program) pharmacy, junior nursing, and exercise physiology and senior-level undergraduate students from MLS in fall semester 2013. The activity was repeated in fall semester 2014. The number of students represented from each discipline for each year of the activity are presented in Table 1.

The study was approved by the University’s institutional review board.

Table 1. *Number of students participating in all aspects of the IPE activities*

| | 2013 | 2014 |
|---------------------|------|------|
| Pharmacy | 178 | 148 |
| Exercise physiology | 18 | 6 |
| Nursing | 25 | 26 |
| MLS | 4 | 6 |
| Total | 225 | 186 |

physiology, and nursing programs and senior MLS students were chosen as an initial group for an IPE activity because they were still on-campus for courses and had adequate professional experience to feel confident in their own professional role, but could still benefit from exposure to interprofessional collaboration prior to more extensive practical experience. As no common course existed among the participants, attention turned to determining a day, time, and location for the activities. The participants’ schedules were examined, and a course occurring on the same day and time was identified in each department. From there, the course syllabi were reviewed for similar content as a focus for the activity. Next, a neutral location large enough to accommodate all participants with appro-

The common meeting time for the activity was just 50 minutes long. To allow for completion of all tasks, a great deal of organization and preparation was required. Much of this was accomplished via Moodle, the University’s online learning management system (LMS). An IPE Moodle page was created and made available to all students prior to the activity.

Prior to the interdisciplinary case study session, all students received lectures in each disciplines’ respective course outlining cultural competency. The student readiness for IPE was assessed before and after the exercise via a survey posted to the IPE LMS page. Students were required to complete the validated RIPLS, used with permission from the authors (Parsell & Bligh), as

a pre-test. The tool has 19 questions which are often categorized as suggested by McFayden et al. (2005) into four subsets that address teamwork and collaboration (items 1-9), professional identity both positive (items 10-12) and negative (items 13-16), and roles and responsibilities (items 17-19). (Table 2). Students were asked to answer each of the questions using a Likert scale where 5=strongly agree and 1=strongly disagree.

After completing the pre-test, students were able to review a PowerPoint presentation that detailed background information for each representative discipline to give students a shared knowledge of the other involved professions. The PowerPoint presentation was posted to the IPE LMS page. In addition, an example case was posted to assist students in knowing what to expect regarding the activity. For the 2014 activity, IPE committee members appeared in a video modeling the desired behaviors, which was also posted to the IPE LMS site.

For the IPE case, students met in-person for two, one-hour sessions. Pharmacy students participated in only one of the two sessions, so this group of students could be split in half to reduce the number of pharmacy students in each group. All non-pharmacy students attended both sessions. Four cultural scenarios were developed by involved faculty to reflect implications of diversity on provision of healthcare and cultural competency. Specifically, the scenarios focused on religious diversity and self-care. During each session, each group was assigned one patient scenario and worked collaboratively to assess the patient case and design an appropriate treatment plan within a problem-based environment. Faculty from all disciplines were present to provide guidance for the students as needed. Suggested issues to consider for each patient scenario were also provided to help further guide student discussion.

Students were assigned an interdisciplinary group consisting of 7-8 students for the activity. Specifically, each group included 4-5 pharmacy students, 1-2 nursing students, and one exercise physiology student. MLS students were available to place in four groups in 2013 and six groups in 2014. Students were placed in groups for even distribution and representation of disciplines with each group assigned a table number. A chart containing this information was posted to

the IPE LMS page to expedite group formation the day of the activity. Although it is evident there were more pharmacy students in each group, all groups contained representation from at least three discipline. Ideally there would be even number of students from each discipline in each group; however, this was not feasible with the disproportionate class sizes between disciplines. However, attempts were made to balance pharmacy and non-pharmacy representation. Also, it should be noted that it is not unusual in practice to see uneven discipline distribution, and the activity also reflects this issue.

The cases were posted on the IPE LMS page, utilizing a timing feature that did not allow them to be viewed until the activity start time. This feature was very helpful as committee members had agreed to not reveal the cases to their students prior to the activity. The timing feature ensured that all participants would be introduced to the case at the same time, mimicking the spontaneity of introducing a new case in a healthcare facility. The reporting form required for the group submission was also posted. The IPE LMS page was then used to make an electronic submission of the completed form.

To promote professionalism and simulate the healthcare environment, students were required to wear the attire of their profession. In addition, each participant was required to wear a name badge. To facilitate collaboration, round tables were utilized allowing all group members to see and hear each other throughout the activity. Each group was instructed to select a student to serve as the recorder and submitter of their completed assignment.

It was also determined that a common method for documenting responses should be established. Students were provided a simple reporting form stating the cultural scenario followed by headers prompting them to develop and record an assessment, recommendations, and follow-up plan. Each group submitted a single response to the IPE LMS page. Faculty applied a rubric to assess appropriateness of responses regarding both therapeutic and cultural considerations and reference materials used by each team. Through the rubric, student responses to the cultural case were categorized as either addressing “appropriately/correctly”, “somewhat appropriately/correctly”, “inappropriately/incorrectly”, or “not addressing” each of the following dimensions of

the case: assessment, pharmacologic recommendations, non-pharmacologic recommendations, preventive recommendations/wellness, monitoring/follow-up; patient counseling, cultural issues, and incorporation of multi-disciplinary care. In addition, the references the students cited were assessed for appropriateness and quality. (Table 3)

Following the completion of both IPE case study sessions, a one-hour session including all participating students was conducted to review all case scenarios. Faculty members led the review session and modeled collaborative interactions by soliciting input from other disciplines during the discussion and incorporating perspectives from all disciplines during the discussion. Students were then required to complete the RIPLS survey as a post-test via the IPE LMS. Additional questions on the post-test specifically assessed the usefulness of the activity in furthering students' understanding of other healthcare-related disciplines and application of cultural competency in patient care via two Likert scale questions. Three open-ended questions allowed students to provide any other comments or feedback not already captured by the other questions were also included on the post-test. At the conclusion of the semester, students had additional opportunities to provide feedback through online, standardized course evaluations.

Results

Two hundred twenty-five undergraduate students from each represented program participated in fall semester 2013 and 196 undergraduate students from each represented program participated in fall semester 2014. Over the two years of the activity, a total of 411 students (97.6%) completed all components of the IPE activity (pre-test, activity, post-test, and wrap-up session).

There were three main areas that the faculty were interested in assessing about this interdisciplinary problem-based learning assignment: 1) students' readiness for IPE before and after the exercise using the RIPLS; 2) student perceptions about the activity; 3) students' performance on the case. Comparison of RIPLS results before and after the activity, feedback received from students, and assessment of student performance indicate that it was an impactful learning experience.

The RIPLS was completed both before and after the exercise. Aggregate student responses are presented in Table 2. In general, student responses for each question on the RIPLS were positively influenced by the IPE exercise. The paired t-test was utilized to identify statistically significant differences between pre- and post-test responses. Statistically significant differences were identified for responses for 10 of the questions in the RIPLS and within all 4 subscales of the RIPLS questionnaire. Cronbach alpha was calculated to measure the internal consistency of the RIPLS questionnaire. The overall result was 0.853; each of the subscales were as follows: teamwork and collaboration=0.881, positive professional identity=0.82, negative professional identity=0.670, roles and responsibilities=0.522. Data were analyzed using SPSS version 22 (Armonk, NY; IBM Corp).

Feedback gathered from the students regarding their perceptions about the exercise via the post-test was also evaluated. Overall feedback on the exercise was positive. One hundred seventy-seven students (43.1%) "agreed" and 195 (47.4%) "strongly agreed" that participation in the activity improved their understanding of what other healthcare-related disciplines do and their role in patient care. Furthermore, 193 students (47%) "agreed" and 174 (42.3%) "strongly agreed" that the activity had made them more aware of cultural competency principles and its importance in patient care. Additionally, a thematic analysis of responses to the open-ended questions conducted by one faculty member showed the following common themes:

Students indicated that through the exercise, they gained an appreciation of teamwork and an understanding and appreciation of other discipline roles and expertise. For example, a pharmacy major wrote: "I felt as though this IPE event allowed me to gain respect for fellow healthcare professionals. This respect is vital to being an effective member of the healthcare team." A MLS student shared:

I had the opportunity to utilize the knowledge that I have gained and apply it to a situation with the help and input of other medical professionals. This really represented how the workforce will be and I feel that I will truly enjoy working with all disciplines of the medical field.

Table 2. Comparison of pre- and post-exercise results for the Readiness for Interprofessional Learning Scale (RIPLS) (n=411 students) * indicates statistically significant difference from baseline (alpha set a priori at $0 < 0.05$)

| Question | Pre-test score (mean +/- SD) | Post-test score (mean +/- SD) | p-value |
|---|---------------------------------|----------------------------------|---------|
| 1. Learning with other students will help me become a more effective member of a health care team | 4.67 (+.489 SD) | 4.65 (+.536 SD) | 0.412 |
| 2. Patients would ultimately benefit if health care students worked together to solve patient problems | 4.75 (+.467 SD) | 4.76 (+.495 SD) | 0.615 |
| 3. Shared learning with other health care students will increase my ability to understand clinical problems | 4.53 (+.581 SD) | 4.56 (+.620 SD) | 0.401 |
| 4. Learning with health care students before qualification would improve relationships after qualification | 4.33 (+.704 SD) | 4.48 (+.675 SD) | 0.0001* |
| 5. Communication skills should be learned with other health care students | 4.53 (+.610 SD) | 4.53 (+.638 SD) | 0.946 |
| 6. Shared learning will help me think positively about other professionals | 4.28 (+.700 SD) | 4.31 (+.753 SD) | 0.348 |
| 7. For small group learning to work, students need to trust and respect each other | 4.70 (+.511 SD) | 4.67 (+.531 SD) | 0.278 |
| 8. Team-working skills are essential for all health care students to learn | 4.69 (+.546 SD) | 4.65 (+.584 SD) | 0.197 |
| 9. Shared learning will help me understand my own limitations | 4.21 (+.756 SD) | 4.29 (+.748 SD) | 0.025* |
| 10. I don't want to waste my time learning with other health care students | 2.53 (+1.423 SD) | 1.80 (+.646 SD) | 0.0001* |
| 11. It is not necessary for undergraduate health care students to learn together | 2.47 (+1.400 SD) | 1.86 (+.667 SD) | 0.0001* |
| 12. Clinical problem-solving skills can only be learned with students from my own department | 2.46 (+1.488 SD) | 1.81 (+.626 SD) | 0.0001* |
| 13. Shared learning with other health care students will help me communicate better with patients and other professionals | 4.47 (+.598 SD) | 4.46 (+.652 SD) | 0.719 |
| 14. I would welcome the opportunity to work on small-group projects with other health care students | 4.20 (+.744 SD) | 4.19 (+.804 SD) | 0.848 |
| 15. Shared learning will help clarify the nature of patient problems | 4.22 (+.730 SD) | 4.34 (+.679 SD) | 0.001* |
| 16. Shared learning before qualification will help me become a better team worker | 4.38 (+.654 SD) | 4.48 (+.679) | 0.007* |
| 17. The function of nurses and therapists is mainly to provide support for doctors | 2.72 (+1.087 SD) | 2.40 (+.931 SD) | 0.0001* |
| 18. I'm not sure what my professional role will be | 2.55 (+1.158 SD) | 1.99 (+.653) | 0.0001* |
| 19. I have to acquire much more knowledge and skills than other health care students | 2.96 (+.979 SD) | 2.65 (+.912) | 0.0001* |

In addition, they found collaboration to improve quality of patient care and learning across disciplines as among the most helpful parts of the activity. One comment by a pharmacy major stated:

For one, I liked the patient cases required extensive research on the cultures that were generally minorities. It was not only interesting to learn about their specific beliefs, but it will also be helpful in the future for me. I also liked that we had such a wide span of professions that had very different but positive outlooks on the case.

Another pharmacy student wrote:

No one needs to solve the problems of a patient alone, and based on the wide range of expertise students brought to the various cases, it seems it would be irresponsible to do so. Patients will undoubtedly benefit if health care is a team effort.

An exercise physiology major wrote:

I really liked how different professions came and worked together as I feel that this is what the future of health care should lean towards. Even though there were times where students disagreed upon certain dosage of either exercise, medication, and recovery methods, I thought it was nice to understand the thought process and vision that each profession had towards a patient coming into their office.

Another exercise physiology student commented: "I found that by working together as a team it not only solved problems in a fraction of the time, but also helped us give the patient a more in depth assessment/observation." A nursing student observed: "[This exercise] helped me see how important it is to have input from other disciplines because not one discipline can possibly know every solution to a patient problem." When asked what could be done to improve the activity, the 2 main themes were to have smaller teams and for faculty to develop a different way to share the results of the activity with the students other than the wrap-up session that had been utilized.

The third and final area assessed in this exercise was the student's actual performance on the case study.

The performance of each interdisciplinary student team (n=66) was assessed through the use of a standardized rubric. Faculty involved with scoring the student responses met for a norming session to standardize response evaluation and rubric utilization. Table 3 shows the results of the faculty assessment of team submissions. Overall, student performance in clinical care-related dimensions was consistent with expectations given that they had not yet finished their curriculum. While most groups included elements from each discipline that was part of that particular team, not all groups described how the disciplines would work together to care for the patient. Deficiencies were noted primarily in the use and citation of appropriate reference materials.

Discussion

Many undergraduate students in health professionals have limited exposure to learning across disciplines. Interprofessional education presents an opportunity to foster professional skills necessary to working collaboratively. Once in practice, students need to be prepared to serve as healthcare professionals capable of interdisciplinary interaction within the healthcare system to provide safe, effective, comprehensive patient care. The literature is extensive supporting the use of IPE across the healthcare disciplines. It is imperative to provide students the opportunity to practice the communication and collaboration skills necessary to improve patient outcomes, streamline processes, decrease errors, prevent delays in treatments, and improve patient satisfaction (IPEC, 2011).

Small, rural universities not affiliated with medical centers or that lack traditional professional programs face challenges in providing meaningful IPE experiences. However, due to a need to formally incorporate IPE in a systematic way, the faculty at a private, rural Midwestern university were able to successfully incorporate an IPE activity for students in required courses in 4 disciplines. This was possible due to establishing a committee with "buy-in" from all disciplines on campus. Faculty also invited a student representative on the committee to assess student perspectives during the planning process and obtained student feedback after the activity. Logistics, such as finding a common time for the exercise, a limited time frame, and disproportionate class sizes among healthcare disciplines were

Table 3. *Analysis of content of written submissions (n=66 teams)*

| Dimension | Addressed Appropriately/ Correctly | Addressed Somewhat Appropriately/Correctly | Addressed Inappropriately/ Incorrectly | Not addressed |
|---|---|---|---|----------------------|
| Assessment | 31 | 35 | 0 | 0 |
| Pharmacologic Recommendations | 32 | 30 | 1 | 3 |
| Non-pharmacologic Recommendations | 45 | 20 | 0 | 1 |
| Patient Counseling | 48 | 17 | 0 | 1 |
| Cultural Issues | 43 | 18 | 1 | 4 |
| Preventive Recommendations/ Wellness | 30 | 18 | 2 | 16 |
| Monitoring/ Follow- up | 40 | 24 | 1 | 1 |
| References | 14 | 36 | 13 | 3 |
| Incorporation of multi-disciplinary care | 56 | 10 | 0 | 0 |

overcome. Successful implementation of IPE activities also relies on determining assessment methods to evaluate both content areas and professional skills during the planning process. Lastly, utilizing technology to facilitate activities allows live activity time to be used efficiently.

The IPE exercise described here provided students with opportunities to develop skills related to both content areas and professional skills, including cultural competency, collaboration and teamwork. Clear instructions were established by providing background information to all students prior to the activity. In addition, professionalism was encouraged through professional dress and reinforcement of professional expectations. Faculty role-modeling was demonstrated by active collaboration and participation of all involved faculty. In addition, differences in documentation (for example, SOAP notes compared to nursing notes) among health-care disciplines was overcome by use of a standardized

response form that was novel to all disciplines involved.

Although the assessment methods utilized in the study allow for evaluation of different aspects of the activity, these methods have limitations to consider. First, the use of the RIPLS tool provided positive results regarding readiness for interprofessional learning, but these results should be viewed with caution, particularly in regard to the low internal consistency of two subsets of the scale: negative professional identity and roles and responsibilities. Second, thematic analyses of student responses provided examples of positive response from students and provided qualitative feedback on the activity. However, this analysis represents subjective categorization of student feedback. Analysis of qualitative data by independent evaluation would be preferred. Lastly, the rubric utilized to evaluate student performance was developed internally and has not been externally validated. The tool was applied after an internal norming session to allow consistency among

reviewers, but independent evaluation would have been preferred.

Since this activity was first developed and implemented in the fall of 2013, additional IPE activities have been created and implemented throughout the curriculum with freshmen and senior-level students. Feedback from the described activity aided in developing the activity and associated assessment strategies. Offering IPE activities across the curriculum also allows for the collection of longitudinal data to determine whether students' skills in incorporating cultural considerations into appropriate therapeutic recommendations improve as they progress in their coursework, adding to the work described in the current study. In addition, IPE has been incorporated into more extracurricular and outreach activities. Additional opportunities to expand IPE include the development of electives that include elements of IPE or to develop courses team-taught among faculty from other disciplines that include elements of IPE. Future IPE offerings serve to expand positive outcomes demonstrated in the activity described in the current study. Moreover, feedback and assessment of the activity provided support for improvements to the activity during future iterations.

Conclusion

With practice, any skill, including collaboration among healthcare professionals, can be improved. Exposure to IPE within the undergraduate setting presents opportunities for students to practice skills necessary for successful patient-centered, team-oriented treatment. The activity described in this study provided a foundation for educational redesign within the university under study and served as a starting point for future discussions on enhanced IPE integration within health care curricula. Positive impact on student readiness for interprofessional learning, perception of interdisciplinary care, and performance in related content areas were demonstrated through activity implementation and evaluation. Positive outcomes were demonstrated despite logistical challenges and lack of traditional resources. Unique content areas and healthcare disciplines were utilized within the activity. IPE developers are encouraged to utilize the described activity as a template to assist in preparing students for the ever-changing health care game.

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